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Perceptions and Preparedness: An Investigation of Agricultural Education Teachers' Self-Efficacy for Including Students with Learning Difficulties in Supervised Agricultural Experience Programs

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Abstract

This study explored secondary Georgia school-based agricultural education (SBAE) teachers' perceptions of instructing students with learning difficulties in Supervised Agricultural Experiences (SAEs) programs. The perceived importance and competence levels of SBAE teachers utilizing individualized education programs (IEPs), implementing inclusive classroom practices, and adapting instruction for diverse learners were addressed using Bandura's self-efficacy theory. We used a post-positivist, descriptive correlational design to gather and analyze collected data. The instrument contained 65 questions and statements separated into six sections: 1) Individualized Education Programs (IEPs); 2) best management practices for the agriculture classroom and SAE; 3) implementing teaching strategies based on learning challenges; 4) changes in the IEP population; 5) current IEP population; and 6) personal characteristics. The questions were categorized into sections to determine the educator's perception of Individualized Education Programs alone before introducing IEPs in the various components of the agriculture classroom. A Borich Model was used to determine the educator's perceived level of importance as well as the level of competence. Participants (n = 43) acknowledged the high importance of including students with learning difficulties, needing additional training to utilize student IEPs to tailor instruction effectively, and equipping new teachers with the skills needed for selecting appropriate instructional strategies to improve student learning. These discrepancies suggest a need for targeted professional development to enhance teachers' confidence and skills. The findings highlight areas for improvement, such as effectively using IEPs, implementing best practices for inclusive learning environments in classrooms and SAEs, and selecting appropriate teaching strategies for students with varying needs.

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Introduction

During the 2022-2023 academic school year, 7.3 million (15 percent) of school-aged children in the United States of America received special education or related services as outlined by the Individuals with Disabilities Act (IDEA) of 1975 (National Center for Education Statistics, 2024). To better address the learning needs of students with difficulties, many school-based agricultural education (SBAE) teachers have reevaluated their teaching strategies to address better the needs of students receiving or qualifying for special education services (Teixeira & Edwards, 2020). Johnson et al. (2012) reported that 58% of SBAE teachers needed further training to address the needs of students with learning difficulties inherent to the supervised agricultural experience program (SAE), while Clemons et al. (2018) reported that continuing education for SBAE teachers is of such importance to the pedagogical improvement of SBAE teachers regardless of the grade level. Past studies have identified inclusion strategies, benefits, barriers, and teacher confidence in including students with learning difficulties in the SBAE classroom (Dormody et al., 2006; Stair, 2009; Wilkins, 2018; Wilson, 2013). Instructor-led and student participation in SAE has steadily declined since the mid-1990s (Rubenstein & Thoron, 2015). Barrick et al. (2011) ascertained that SAE programs are "planned and supervised programs of experience-based learning activities that extend school-based instruction and enhance student knowledge, skills, and awareness of the agricultural industry. (p. 9.). The decline of student participation in SAE is associated with SBAE teachers needing to familiarize themselves with the SAE program, reductions in the available time, materials, motivation, and communication between stakeholders (Dyer & Osborn, 1995; Foster, 1986; Lewis et al., 2012; McKibben et al., 2021). This study explicitly examined SBAE teacher self-efficacy when designing and delivering instruction to students with learning difficulties regarding student-led SAE programs.

SAEs are a required component of agricultural education, and it is essential to understand teachers' basic knowledge of inclusion to develop professional learning opportunities to meet their needs and increase student success in SAEs. Between 2020-2021, 62.41% of Georgia students qualified for services afforded by IEPs in general education classrooms for at least 80.00 percent of the school day (IDEA, 2021). Dormody et al. (2006) reported that SBAE teachers possess low self-confidence yet recognize the importance of teaching students with learning difficulties. Inclusion rates of students qualifying for or receiving services under the IDEA will increase during the next decade, and many students will enroll in SBAE courses. The confluence of low SBAE teacher self-efficacy, unfamiliarity with the IEP, and ineffective teaching strategies (Cologon, 2013) creates the potential for professional crises. Giffing et al. (2010) reported that 76.9 percent of SBAE teachers agreed that students with IEPs should be enrolled in SBAE courses. Strong evidence exists (Johnson et al.,2012; Ramage et al., 2022; Wilkins-Brittain et al., 2022) detailing the need for professional development to address special education and IEP student accommodation strategies when providing instruction in supervised agricultural experience programs.

Including SBAE supervisory roles in student-based SAE programs provides contextual bridges between classroom instruction and pragmatic skill development through supervised agricultural experiences. The core tenet of SAE programs is to improve the foundational contexts of learning in the SBAE classroom to experiences to ensure deep learning and application (McKibben et al., 2024). Between 1913 and 1917, Hummel and Hummel's (1913) advocacy for the distinction between vocational training and the acquisition of cultural and disciplinary studies in agricultural content underwent a shifting paradigm with the passage of the Smith-Hughes National Vocational Education Act of 1917, commonly referred as the Smith-Hughes Act (1917). The Smith-Hughes Act emphasized learning through student-based learning experiences described by Stimson (1919) as farming projects (Smith & Rayfield, 2016). The Smith Hughes Act's provisions can be attributed to developing projects (SAE). The act required SBAE teachers to supervise students' home projects to ensure federal funds were available to the local program. The Smith-Hughes Act (1917) ensured federal funding for vocational training programs, expanded state and local educational entities, and created the Federal Board of Vocational Education to distribute funds for approved state plans.

Tenets of the Smith Hughes Act (1917) were grounded in the early definitions of agricultural education by incorporating the child's development, efficiency, and duty to develop productive citizens.

Agricultural education policies and legislation aimed to improve access to instruction for all public education students in the United States. The Vocational Education Act (V.E.A.) 1963 increased individual states funding for SBAE programs teaching vocational-based courses (Talbert et al., 2022). The goal of the V.E.A. was to prepare the population of students enrolled in agricultural education while also expanding the traditional understanding of agriculture beyond farm-based production.

Reauthorization of the IDEA is mandated every five years to meet the current educational, legal, and protective measures for students. Amendments were enacted in 1986 (P.L. 99-457), 1990 (P.L. 101-476), 1997 (P.L. 105-17), and 2004 (P.L. 108-446). Mandates for developing model programs and implementing best practices for success with transitional services for students with learning difficulties (Harvey, 2001) should include activities and goals to be written for each student at 16 years and older in their transitional service plan (Harvey, 2001). The transitional service plan aims to help students plan their future and create a smooth transition from the school setting to potential college, workforce, or future living situations.

The 1997 IDEA reauthorization "raised academic expectations for students with learning difficulties, increased parental involvement in the educational process, involved regular classroom teachers more in the planning process, included all students in assessment and public reports, and supported greater professional development" (Talbert et al., 2022, p. 375). Buell et al. (1999) reported that teachers often experience a lack of confidence in writing and participating in IEP meetings, managing behaviors, adapting materials or curriculum, and giving individual assistance to students with learning difficulties. Adding general education teachers to the individualized education plan (IEP) team and providing more professional development for non-special education classroom teachers to increase their knowledge of teaching students with learning difficulties. Buell et al. (1999) noted the addition of general educators to the state's professional development committee to improve service and in-service education in special needs. The IDEA Act of 2004 "[mandated] a free and appropriate public education (FAPE) in the least restrictive environment (L.R.E.) for all students with learning difficulties with emphasis placed on the provision of instruction with nondisabled peers to the greatest extent possible" (Harrison et al., 2018, p.2). Reauthorizations of the IDEA help foster inclusive classrooms for student learning while creating uncertainty in teaching strategies and skills for SBAE teachers.

Stair and Moore (2010) noted that students enrolled in C.T.E. courses to improve their practical skills and prepare for the workforce after high school. Harvey (2001) found that students with learning difficulties often enter the workforce instead of seeking post-high school education. Pense et al. (2015) described that a disparate number of U.S. high school graduates need to prepare adequately for modern college and career readiness expectations, emphasizing the need to provide students with opportunities to develop work-ready skills found in career and technical education courses. Stair and Moore (2010) supported SBAE teacher's perceptions of being unprepared to address the needs of students with learning difficulties (2010).

Theoretical Framework

This study was framed in Bandura's (1997) theory of self-efficacy to understand better how individuals believe in their capacities to possess and develop the skills to attain their goals. Self-efficacy theory relies on attitudes and behaviors for a positive self-efficacy outcome. The teacher's belief in their ability can affect their working conditions and environment. According to Atkinson (2020), the level of self-efficacy can change depending on "the schools, community, available resources, student population, and administrative leadership" (p. 20-21).

There are two dimensions to self-efficacy theory: self-efficacy and outcome expectancy (Stair et al., 2010). Self-efficacy is the belief in one's ability to perform a task successfully and outcome expectancy. As described by Atkinson (2020), outcome expectancy addresses the individual's self-evaluation of the outcome of the task at the predicted level of failure or success. The expected result for SBAE teachers when providing instruction to students with learning difficulties is the student gaining life-ready and work-ready skills, allowing them to work and contribute as community members.

Evidence of SBAE teacher self-efficacy correlates with the teacher's professional learning experiences. The ability to successfully instruct students in any setting requires more than training for teachers to feel empowered to apply new skills and competencies" (Buell et al., 1999, p. 145). This empowerment is the confluence of positive self-efficacy and attitude. According to Giffing et al. (2010), a positive attitude when working with students with learning difficulties is one of the most valuable elements. A positive self-efficacy when teaching students with learning difficulties is vital. Giffing et al., 2010 stated, "Teacher's perceptions and attitudes toward inclusion affect the successful implementation of inclusive education." (p. 103). Teacher self-efficacy towards inclusion can depend on pre-service training, the amount of experience they have had in inclusion, professional development taken in inclusion, whether the experiences and classes taken were positive or negative experiences, and the area of inclusion at the time (Atkinson, 2020).

Purpose and Objectives

This study explicitly examined SBAE teacher self-efficacy when designing and delivering instruction to students with learning difficulties regarding student-led SAE programs. The objectives of this study included 1) describing the personal characteristics of SBAE teaching in Georgia participating in the study and 2) determining the level(s) of importance and competence of utilizing Individualized Education Programs (IEPs) as perceived by school-based agricultural education teachers in Georgia and 3) determining the perceived importance and competency of Georgia SBAE teachers when implementing best management practices to include students with learning difficulties in the classroom and SAE

Methods

This post-positivist quantitative study used a descriptive correlational research design (Creswell, 2014) to address the objectives of this study. Creswell (2014) defined the purpose of descriptive correlational research as the relationship among variables to determine the connections between them. We used descriptive survey research methods to collect data from Georgia SBAE teachers on their perceived level of importance and competence when advising students with learning difficulties in the agriculture classroom and SAEs. According to Creswell (2014), using survey-based research is appropriate when ascertaining the quantitative realities and perceptions of the population.

We used non-probability sampling techniques to determine the participants of this study. Non-probability sampling allows the researcher to select their sample based on their judgment rather than randomly selecting participants (Creswell, 2014). The Krejcie and Morgan (1970) sample size calculator determined the sample size. The population consisted of 407 (N = 407) potential study participants in Georgia. Following Krejcie and Morgan's (1970) recommendations for sample size, 198 (n = 198) participants were selected. Lindner et al. (2001) reported that membership rosters may be absent of potential respondents of the studied population. A review panel of agricultural education experts evaluated the membership roster for accuracy and appropriateness to reduce the potential for frame error. Participants were selected from the 2023 Georgia Agricultural Education Directory with the assistance of the Georgia Agricultural Education Program Director.

The instrument created for this study was derived from a review of published and available peer-reviewed work (Dormody et al., 2006; Stair, 2009; Wilson, 2013; & Wilkins, 2018) addressing special education. The instrument was developed and disseminated through Qualtrics and contained 65 questions and statements separated into six sections in interval scale format: 1) IEPs, 2) best management practices for the agriculture classroom and SAE, 3) implementing teaching strategies based on learning challenges, 4) changes in the IEP population, 5) current IEP population; and 6) personal characteristics. Lindner and Lindner (2024) reported that interval scale measurements are most appropriate when determining the participants' level of agreement. The questions were categorized into sections to determine the participants' perception of IEPs before introducing IEP interventions in the SBAE classroom. The Borich model was used to determine the participant's perceived levels of importance and competence to identify the competencies and training needs of the participants (Caillouet & Harder, 2022). Interval measurement scales were used to determine responses from the participants and included 1) very important/very competent, 2) important/competent, 3) somewhat important/somewhat competent, 4) of little importance/little competence, and 5) not important/not competent.

Content and face validity were examined to minimize instrumentation errors (Lindner et al., 2001). Content validity was completed by cross-referencing similar studies and current resources in education for IEPs. Face validity gauges the overall appearance of the instrument and ensures that the appropriate variables are measured (Creswell, 2014). Agricultural education and special education faculty at Auburn University addressed the instrument's inter-rater reliability. Relevant changes were made to the wording of the instrument and formatting in Qualtrics. We conducted an external pilot study before formal data collection *(N* = 21) consisting of 21 Georgia SBAE teachers who were not included in the final survey. The participants were asked to review the instrument to address potential issues, as described by Clemons et al. (2019). Cronbach's Alpha (α) was calculated for each of the three categories: section one (α = .93), section two (α = .91), and section three (α = .94). Ross (2010) recommended .70 as the minimum threshold for Cronbach's Alpha to maintain reliability.

We distributed the final instrument to 198 (n = 198) potential participants. Partially completed instruments were removed from the data analysis, yielding 43 (21% percent) complete instruments (Doss & Rayfield, 2022). Four follow-up reminders were sent to potential participants at seven-day intervals. A comparative analysis between early and late respondents identified no statistical differences between responses (Lindner et al., 2001). A combination of mean weighted discrepancy scores (MWDS), multivariate analysis of variance (MANOVAs), frequencies, means, standard deviations, percentages, and personal characteristics such as years' experience, degree completion, and gender were used to analyze the data. This procedure subtracts the importance score from the competency score. This score was multiplied by the grand importance mean for each competency level. This use of grand mean emphasizes the population perception in the calculation (Narine & Harder, 2021). The MWDS allows researchers to understand better which areas or constructs teachers need additional instruction, in-service, or professional development training. A positive discrepancy indicated a need to train further, and a negative discrepancy suggested an abundance of training.

A MANOVA was used to compare multiple variables simultaneously for certain independent variables. Sections one, two, and three were further organized into constructs to analyze the data better. Twenty statements were similarly organized into constructs of accessing IEPs, understanding IEPs, utilizing IEPs, and utilizing IEP supports. Section two was organized into constructs: best practices in the classroom and best practices advising SAEs. Section three was organized into four IEP-associated challenges: learning, behavioral, sensory, and physical. To create uniformity when analyzing the data, sections were organized into constructs, including developing instruction based on the type of challenge, implementation of learning strategies based on the type of challenge, advising SAEs based on the kind of challenge, working with students with learning challenges, working with students with behavioral difficulties, working with students with sensory challenges, and working with students with physical challenges. These constructs were used as

dependent variables (*DV*) compared to independent variables (*IV*), e.g., years of teaching, highest degree completed, etc.

Findings

The results of this study are presented objectively and represent the analysis of Georgia SBAE teachers' levels of competence and importance when addressing components of special education in the SBAE classroom. The instrument contained 65 questions and statements separated into six sections: 1) Individualized Education Programs (IEPs); 2) best management practices for the agriculture classroom and SAE; 3) implementing teaching strategies based on learning challenges; 4) changes in the IEP population; 5) current IEP population; and 6) personal characteristics. The questions were organized into constructs based on the research objectives under investigation. These findings correspond to the research instrument and are presented as an analysis of the data.

Objective One: Describe the personal characteristics of SBAE teacher study participants in Georgia.

Personal characteristics of the participants (Table 1) were collected to better understand the study respondents' demographics. The participants were evenly represented by males *(n* = 21, 50.00%) and females (n = 21, 50.00%). The largest group of respondents had completed a bachelor's degree (*n* = 18, 41.90%), master's degree (*n* = 12, 27.90%), specialist degree (*n* = 9, 20.9%), and doctorate (*n* = 4, 9.30%). Most respondents have taught between 11-20 years (*n* = 13, 30.20%), 1-5 years (*n* = 12, 27.90%), 6-10 years (*n* = 12, 27.90%), and over 20 years (*n* = 5, 11.60%). Georgia SBAE programs are divided into three regions by location: north (*n* = 22, 51.2%), central (*n* = 10, 23.30%), and south (*n* = 10, 23.30%).

Table 1

Characteristics of Georgia School-Based Agriculture Educators

		N	*%*
Gender	Female	21	48.8
	Male	21	48.8
Highest degree earned	Bachelors	18	41.9
	Masters	12	27.9
	Specialist	9	20.9
	Doctorate	4	9.3
Years taught	1-5 years	12	27.9
	6-10 years	12	27.9
	11-20 years	13	30.2
	Over 20 years	5	11.6
SBAE Region	North	22	51.2
	Central	10	23.3
	South	10	23.3

Objective Two: Determine the importance and competence of utilizing Individualized Education Programs (IEPs) as perceived by secondary agricultural education teachers in Georgia.

A Borich analysis was used to report teachers' perceived importance and competency. Items within the Borich analysis sections of the instrument were divided into constructs based on specific content. Section one of the instrument, IEP, was split into four constructs: accessing IEPs, understanding IEPs, utilizing IEPs, and utilizing IEP supports.

Mean weighted discrepancy scores (MWDS) were used (Table 2) to determine if teachers' perceived level of importance and competency aligned. All four constructs show teacher's documented high levels of importance but low levels of competency. In order from lowest *MWDS* to highest, understanding IEPs (*MWDS* = -2.63), utilizing IEP support (*MWDS* = -2.40), utilizing IEPs (*MWDS* = -2.35), and accessing IEPs (*MWDS* = -2.08).

Table 2

Mean Weighted Discrepancy Scores for Section One Constructs

Construct	*MWDS*	*SD*	*Min*	*Max*	*α*
Accessing IEPs	-2.08	4.07	-8.67	8.52	.829
Understanding IEPs	-2.63	3.48	-17.38	2.69	.914
Utilizing IEPs	-2.35	3.57	-16.77	3.22	.845
Utilizing IEP support	-2.40	4.15	-15.47	6.70	.862

Note. MWDS=Mean Weighted Discrepancy Score.

Multiple comparisons (Table 3) were made between section one constructs, accessing IEPs, understanding IEPs, utilizing IEPs, and utilizing IEP supports, and the teacher's highest degree was completed. For accessing IEPs, teachers with a bachelor's degree (n = 18, M = -2.86) identified higher levels of importance than lower levels of competency. The remaining groups are presented from lowest mean to highest as follows: master's degree (n = 12, M = -1.65), doctorate (n = 4, M = -1.63), and specialist degree (n = 9, M = -1.29). The construct, understanding IEPs, shows teachers with a doctorate (n = 4, M = -5.71) reported higher importance but lower competency level, bachelor's degree (n = 18, M = -2.83), master's degree *(n = 12, M* = -1.98), and specialist degree (n = 9, M = -1.72). When utilizing a student's IEP, teachers with a doctorate (n = 4, M = -4.97) had a higher level of perceived importance and a lower level of competency. From lowest mean to highest for the other three groups, bachelor's degree (n = 18, M = -2.76), specialist degree (n = 9, M = -1.53), and master's degree (n = 12, M = -1.48). When analyzing the use of IEP support, teachers with a doctorate (n = 4, M = -6.23) had a higher level of perceived importance and lower levels of competency, bachelor's degree (n = 18, M = -2.42), master's degree (n = 12, M = -1.76), and specialist degree (n = 9, M = -1.51).

Table 3

Multiple Comparisons Between Highest Degree Earned and Section One Constructs

Construct	Highest Degree Completed	*M*	*SD*	*N*
Accessing IEPs	Bachelors	-2.86	3.92	18
	Masters	-1.65	5.21	12
	Specialist	-1.29	2.74	9
	Doctorate	-1.63	4.34	4
	Total	-2.08	4.07	43
Understanding IEPs	Bachelors	-2.83	1.90	18
	Masters	-1.98	3.53	12
	Specialist	-1.72	2.68	9
	Doctorate	-5.71	8.22	4
	Total	-2.63	3.48	43
Utilizing IEPs	Bachelors	-2.76	2.28	18
	Masters	-1.48	3.54	12
	Specialist	-1.53	2.35	9
	Doctorate	-4.97	8.56	4
	Total	-2.35	3.57	43

Utilizing IEP Supports	Bachelors	-2.42	3.00	18
	Masters	-1.76	5.47	12
	Specialist	-1.51	2.57	9
	Doctorate	-6.23	6.30	4
	Total	-2.40	4.15	43

Note. N=43.

Multiple Analysis of Variance (MANOVA) was calculated (Table 4) using the highest degree completed *(IV)* and constructs, accessing IEPs, understanding IEPs, utilizing IEPs, and utilizing IEP supports *(DV)*. Box's M test of equality of variance was not significant ($p = .14$), indicating an equality of covariance matrices. Multivariate tests showed that no significant differences were present (*Wilk's* $\Lambda = .700$, F (12,96) = 1.15, $p > .05$).

Table 4

Multivariate Test Between Highest Degree Earned and Section One Constructs

Variable	*Wilk's* Λ	*F*	*df*	*Error df*	*N*2
Highest degree	.70	1.15	12	95.54	.11

Note. P > .05.

Multiple comparisons (Table 5) were made between section one constructs, accessing IEPs, understanding IEPs, utilizing IEPs, and utilizing IEP supports, and the amount of time teaching SBAE. Analyzing access to student IEPs and length of teaching between 1 – 5 years ($n = 12$, $M = -3.33$), participants reported higher levels of importance and lower levels of competency. The other groups from lowest to highest mean were 6-10 years ($n = 12$, $M = -2.58$), 11 – 20 years ($n = 13$, $M = -1.02$), and over twenty years ($n = 5$, $M = 0.58$). Teachers who have taught for over twenty years had a higher level of competency but found it less important to access IEPs. The construct, understanding IEPs, indicated teachers who have taught between 6 – 10 years ($n = 12$, $M = -3.28$) reported higher importance and lower competency levels, teaching between 1 – 5 years ($n = 12$, $M = -3.28$), 11 – 20 years *($n = 13$, $M = -1.61$)*, and over twenty years ($n = 5$, $M = -0.37$).

When utilizing a student's IEP, teachers who have taught between 6 – 10 years ($n = 12$, M = -3.12) had higher levels of perceived importance and lower levels of competency, 1 – 5 years ($n = 12$, $M = -2.52$), 11 – 20 years ($n = 13$, $M = -1.36$), and over twenty years ($n = 5$, $M = 0.21$). Teachers who have taught for more than twenty years reported higher levels of competency and lower levels of importance when utilizing student's IEP Participants reported that utilizing IEP support and having taught between 1 – 5 years ($N = 12$, $M = -3.78$) had higher levels of perceived importance and lower levels of competency, 6 - 10 years ($N = 12$, $M = -2.24$), 11 - 20 years ($N = 13$, $M = -1.92$), and over twenty years ($N = 5$, $M = 1.90$). Teachers who have taught for over twenty years have higher competency levels and less importance in utilizing IEP support networks.

Table 5

Multiple Comparisons Between Years Teaching Agriculture and Section One Constructs

Construct	Years teaching	*M*	*SD*	*N*
Accessing IEPs	1-5 years	-3.33	3.96	12
	6-10 years	-2.58	3.53	12
	11-20 years	-1.02	3.55	13
	Over 20 years	0.58	5.64	5
	Total	-1.94	4.01	42

Understanding IEPs	1-5 years	-2.78	2.15	12
	6-10 years	-3.28	2.45	12
	11-20 years	-1.61	3.12	13
	Over 20 years	-0.37	1.89	5
	Total	-2.28	2.65	42
Utilizing IEPs	1-5 years	-2.52	2.28	12
	6-10 years	-3.12	2.31	12
	11-20 years	-1.36	3.39	13
	Over 20 years	0.21	2.31	5
	Total	-2.01	2.81	42
Utilizing IEP Supports	1-5 years	-3.78	3.37	12
	6-10 years	-2.24	2.91	12
	11-20 years	-1.92	3.91	13
	Over 20 years	1.90	2.92	5
	Total	-2.09	3.66	42

Note. N=43.

Multiple analysis of variance (MANOVA) was calculated (Table 6) between years of teaching *(IV)* constructs, accessing IEPs, understanding IEPs, utilizing IEPs, and utilizing IEP supports *(DV).* Box's M test of equality of variance was not significant (p = .89), indicating an equality of covariance matrices. Multivariate tests indicate that no significant differences were present (*Wilk's* = .681, F (12,93) = 1.21, p> .05).

Table 6

Multivariate Tests Between Years Teaching and Section One Constructs

Variable	*Wilk's*	*F*	*df*	*Error df*	*N*2
Years teaching	.68	1.21	12	92.90	.12

Note. P > .05.

Objective Three: Determine secondary agricultural education teachers' perceived importance and competency in Georgia when implementing best management practices to include students with learning difficulties in the classroom and Supervised Agricultural Experiences (SAEs).

Questions and statements in the Borich analysis, using MWDS, were divided into constructs (Table 7). Section two of the instrument, nest management practices, was split into two constructs: best practices in the classroom and best practices while advising SAEs. Mean weighted discrepancy scores (MWDS) by construct are shown in. Both constructs show teachers' documented high levels of importance but low levels of competency for best management practices in the classroom (*MWDS* = -1.37) and best practices while advising SAEs (*MWDS* = -1.17).

Table 7

Mean Weighted Discrepancy Scores for Section Two Constructs

Construct	*MWDS*	*SD*	*Min*	*Max*	*α*
Best practices in the classroom	-1.37	2.40	-7.13	2.66	.901
Best practices while advising SAEs	-1.17	2.29	-7.79	3.97	.889

Note. MWDS=Mean Weighted Discrepancy Score.

Multiple comparisons (Table 8) were made between the section two constructs, best practices in the classroom, best practices advising SAEs, and the participants' highest degree earned. When analyzing participant responses related to best practices in the classroom, participants with an earned doctoral degree (n = 4, M = -2.90) indicated high importance and low levels of competency, bachelor's degree (n = 18, M = -1.59), specialist degree (n = 9, M = -1.45), and a master's degree (n = 12, M = -0.47). Participants who have earned their doctorate (n = 4, M = -3.14) reported the lowest MWDS for best practices advising SAEs, specialist degree (n = 9, M = -0.67), a master's degree (n = 12, M = -0.39), and a bachelor's degree (n = 18, M = 1.51). Participants possessing only a bachelor's degree reported higher competency levels when using best practices for SAEs but did not find the practices very important.

Table 8

Multiple Comparisons Between Highest Degree Earned and Section Two Constructs

Construct	Highest Degree Completed	*M*	*SD*	*N*
Best practices in the classroom	Bachelors	-1.59	2.23	18
	Masters	-0.47	2.51	12
	Specialist	-1.45	1.99	9
	Doctorate	-2.90	3.52	4
	Total	-1.37	2.40	43
Best practices advising SAEs	Bachelors	1.51	2.34	18
	Masters	-0.39	1.92	12
	Specialist	-0.67	1.56	9
	Doctorate	-3.14	3.66	4
	Total	-1.17	2.29	43

Note. N=43.

Multiple analysis of variance (MANOVA) was calculated (Table 9) between participants' highest degree completed (IV), best practices in the classroom, and best practices advising SAEs *(DV)*. Box's M test of equality of variance was not significant (p = .20), indicating equality of covariance matrices. Multivariate tests showed that no significant differences were present (*Wilk's* = .855, F (6,76) = 1.03, p> .05).

Table 9

Multivariate Test Between Highest Degree Earned and Section Two Constructs

Variable	*Wilk's*	F	*df*	Error df	N2
Highest degree	.86	1.03	6	76	.08

Note. P > .05.

Comparisons were analyzed between best practices in the classroom, best practices advising SAEs, and the amount of time teaching SBAE (Table 10). For best practices in the classroom, participants between 6 – 10 years of teaching reported the lowest MWDS, indicating high importance but low levels of competency (n = 12, M = -1.75), 1 – 5 years (n = 12, M = -1.74), 11 – 20 years (n = 13, M = -0.70), and over twenty years (n = 5, M = -0.65). Participants teaching SBAE between 6 – 10 years (n = 12, M = -1.66) had the lowest MWDS related to best practices when advising SAEs. These participants reported feeling that best practices for advising SAEs are important but possessed low competency levels in completing these practices. The remaining participants reported teaching between 1 – 5 years (n = 12, M = -1.14), 11 – 20 years (n = 13, M = -0.75), and over twenty years (n = 5, M = -0.54).

Table 10

Multiple Comparisons Between Years Teaching Agriculture and Section Two Constructs

Construct	Highest Degree Completed	*M*	*SD*	*N*
Best practices in the classroom	1-5 years	-1.74		12
	6-10 years	-1.75		12
	11-20 years	-0.70		13
	Over 20 years	-0.65		5
	Total	-1.30		42
Best practices advising SAEs	1-5 years	-1.14		12
	6-10 years	-1.66		12
	11-20 years	-0.75		13
	Over 20 years	-0.54		5
	Total	-1.10		42

Note. N=43.

Multiple analysis of variance (MANOVA) was calculated (Table 11) between teaching SBAE (*IV*) and best teaching practices in the SBAE classroom and best practices advising SAEs (*DV*). Box's M test of equality of variance was significant ($p = .04$), indicating inequality of covariance matrices. Multivariate tests indicate that no significant differences were present (*Wilk's* = .935, F (6, 74) = .40, $p < .05$).

Table 11

Multivariate Test Between Years Teaching and Section Two Constructs

Variable	*Wilk's*	*F*	df	Error Df	N2
Years teaching	.94	.40	6	74	.03

Note. P > .05.

The data indicated that teachers valued the importance of the IEP, although their competency in using the IEP to improve instruction could have been higher. This finding was consistent between all levels of education and years of teaching experience. There were no significant differences in the importance of competency in using IEPs between a respondent's level of education or the amount of time teaching in the SBAE classroom. Managing student learning outcomes through best practices was reported as high but overshadowed by low competency and no significance between management, respondents' educational degrees, or years of teaching experience. In summary, the findings of this study indicate that respondents value including students with IEPs but need better support and training to address individual IEPs, management, and best practices to support student learning.

Conclusions, Implications, and Recommendations

This study aimed to examine the perceived level of importance and competence of Georgia SBAE teachers when working with students with learning difficulties in the SBAE classroom and SAEs. Agricultural education has led the way for hands-on teaching approaches to learning life- and job-ready skills. Both skills are increasingly needed for students with learning difficulties. Developing these skills is required to ensure these students can enter the workforce or live more independently after high school graduation.

Conclusions and Implications

Objective one addressed the personal characteristics of SBAE teachers participating in this study. Among the respondents, 41.9% reported only having earned their bachelor's degree, while only 9.3% of

respondents had earned their doctorate. With increased levels of education, an increase in knowledge of how to successfully manage an agriculture program is expected. This finding could be linked to 27.0% of respondents having only taught agriculture for 1-5 years. It can be concluded that it is vital to reach SBAE teachers in the pre-service stage, complete their bachelor's degree, and meet their training needs, including those of students with special needs.

Objective two examined how SBAE teachers perceive the competence and importance of using IEPs. The findings revealed that teachers acknowledged a need to enhance their competence in understanding Individualized Education Plans (IEPs). Conversely, they expressed greater confidence in accessing their students' IEPs. The dimension of understanding IEPs encompasses several aspects: comprehensively reading an IEP, understanding disability definitions, familiarity with relevant laws, interpreting these laws, and defining key terms such as "accommodation," "modification," "inclusion," and "least restrictive environment." Moreover, teachers must grasp how these elements fit together to support the needs of students effectively and underscore the necessity for enhanced pre-service and in-service training covering these areas.

Across all constructs - accessing IEPs, understanding IEPs, utilizing IEPs, and utilizing IEP supports - teachers holding doctoral degrees indicated a high level of importance but lower competency. They emphasized the ongoing need for continuous in-service training tailored to their requirements. With experience, however, many teachers tend to develop greater proficiency. Notably, teachers with over two decades of experience in agricultural education reported a balanced perception of the importance and competency across all four constructs.

Objective three explored how SBAE teachers perceive their competency and the importance of implementing best management practices for including students with learning difficulties in classroom settings and Supervised Agricultural Experiences (SAEs). The findings revealed that teachers viewed themselves as less competent in implementing these practices within the classroom than when guiding students with learning difficulties in SAEs. Best management practices encompass a range of strategies: breaking down instruction, managing the learning environment, providing positive reinforcement, offering additional time, fostering positive learning atmospheres, modifying exams, emphasizing hands-on learning, using alternative rubrics, shortening assignments, and providing oral examination opportunities. This data underscores a need for increased instructional support focused on implementing these strategies, specifically within classroom settings.

According to Wilson (2022), SBAE teachers spend 44% of their time on classroom instruction, highlighting the significance of improving competence in this area. Teachers have indicated a greater need for growth in classroom instruction compared to SAEs, who report spending relatively less time. Regarding perceived competence across both settings, teachers with doctoral degrees reported lower levels of perceived competence in implementing best management practices for classroom instruction and advising SAEs. Conversely, teachers with over 20 years of teaching experience reported equal perceived importance and competence in both contexts. This finding highlights the necessity for continuous in-service training, as competence typically improves with accumulated experience.

Improving competence in implementing best management practices within classroom settings is crucial, given teachers' self-perceptions and their allocation of instructional time. Continuous professional development remains essential to support teachers in enhancing their skills over time and across varying levels of experience.

Recommendations

Agricultural education teachers play a crucial role as team members in the Individualized Education Plan (IEP) process for students with identified learning difficulties in their courses. Ideally, they should attend IEP meetings to actively contribute to developing their students' plans. However, when attendance is not feasible, SBAE teachers should collaborate closely with special educators to gain insights into the IEP details and offer their input.

To enhance the systematic understanding of IEPs among classroom teachers, we recommend holding annual department meetings between the agriculture and special education departments. These meetings provide a platform to discuss program expectations and goals collaboratively. Research indicates that interpersonal communication and observation are effective learning methods. By engaging with special education teachers during these meetings, agriculture teachers can ask questions and clarify expectations, fostering better support for individual student needs. Similarly, special education teachers may need to be more familiar with the specific requirements of SBAE and supervised agricultural experiences (SAEs), which will make these discussions mutually beneficial for improving communication and enhancing competency across both domains. Furthermore, teacher preparation programs can contribute significantly by evaluating their course offerings and incorporating an agricultural education inclusion course for pre-service teachers. Assignments during student teaching should be designed to deepen understanding of inclusive practices, ideally integrating universal design for universal design learning (U.D.L.) principles into lesson planning.

Professional development is ever-changing and adapts to the needs of teachers. Each agricultural education student seeking certification must undergo an apprenticeship or "student-teaching." Student teaching allows future teachers to essentially practice before entering their classroom. Students can learn from their mentor teachers in a safe learning environment while gaining vital hands-on experiences. During this process, depending on the school, some student teachers may have more opportunities than others to gain experience working with students with learning difficulties in the agriculture program. A recommendation would be to develop an assignment during student teaching where student teachers must work closely with the special education department of their apprentice school. This recommendation could be in the form of attending IEP meetings, working with the mentor teacher in creating modifications or accommodations, having the student teacher shadow a special education teacher for a few days or week, or asking the student teacher to work with the case manager to break down each student's IEP to form an understanding of each section and its requirements.

This study concluded that further training in including students with learning difficulties is needed for pre-service and in-service SBAE teachers. The need for additional training contributes to why agriculture teachers have a lower level of competency regarding including students with learning difficulties in the agriculture classroom. Successful agriculture programs start in the agriculture classroom. If a teacher struggles with including students with learning difficulties in the agriculture classroom, there is a higher chance of the other two components of the three-ring model lacking competency. In addition to needing further training, what other restrictions do teachers contribute to their lower competency levels? Future qualitative or quantitative research can examine what agricultural educators identify as contributing to their lower competence levels in working with students with learning difficulties in the agriculture classroom.

This study reported that less than 25% of students with learning difficulties are placed in SAE programs in Georgia. When examining the lower levels of inclusion with supervised agricultural experiences, previous studies in North Carolina and New Mexico have investigated potential barriers to including students with learning difficulties in Supervised Agricultural Experiences. Our profession could benefit from examining perceived barriers to including students with learning difficulties in SAEs in the SBAE classroom.

References

Atkinson Jr, M. R. (2020). *Self-efficacy of early career agriculture teachers and its relationship to career commitment and job satisfaction*. [Doctoral dissertation, Auburn University].

Bandura, A. (1997). *Self-efficacy: The exercise of control.* W H Freeman/Times Books/ Henry Holt & Co.

Barrick, R. K., & Estepp, C. M. (2011). Experience programs in agriscience education: From projects to SAEPs and beyond. *Agricultural Education Magazine, 83*(4), 26-27

Buell, M. J., Hallam, R., Gamel-Mccormick, M., & Scheer, S. (1999). A survey of general and special education teachers' perceptions and in-service needs concerning inclusion. *International Journal of Disability, Development and Education*, *46*(2), 143–156.

Caillouet, O., & Harder, A. (2022). Conducting the needs assessment #8: The Borich model. *EDIS*, *2022*(2). https://doi.org/10.32473/edis-w415-2022

Clemons, C. A., Heidenreich, A. E., & Lindner, J. R. (2018). Assessing the technical expertise and content needs of Alabama agriscience teachers. *Journal of Agricultural Education, 59*(3), 87 – 99. https://doi.10.5032/jae.2018.03087

Clemons, C. A., & Lindner, J. R. (2019). Teacher longevity and career satisfaction in the secondary agricultural education classroom. *Journal of Agricultural Education, 60*(1), 186 – 201. https://doi.org/10.5032.jae.2019.01186

Cologon, K. (2013). Inclusion in education. *Issues Paper.*

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). SAGE Publications.

Dormody, T. J., Seevers, B. S., Andreasen, R. J., & VanLeeuwen, D. (2006). Challenges experienced by New Mexico agricultural education teachers in including special needs students. *Journal of Agricultural Education*, *47*(2), 93–105. https://doi.org/10.5032/jae.2006.02093

Doss, W., & Rayfield, J. (2019). Assessing school-based agricultural education teacher familiarity, knowledge, and perceptions of supervised agricultural experience categories. *Journal of Agricultural Education*, *60*(3). https://doi.org/10.5032/jae.2019.03206

Dyer, J. E., & Osborne, E. W. (1995). Participation in supervised agricultural experience programs: A synthesis of research. *Journal of Agricultural Education, 36*(1), 6–14. https://doi:10.5032/jae.1995.01006

Foster, R. M. (1986). Factors limiting vocational agriculture student participation in supervised occupational experience programs in Nebraska. *Journal of the American Association of Teacher Educators in Agriculture, 27*(4), 45–50. https://doi:10.5032/jaatea.1986.04045

Giffing, M., Warnick, B., Tarpley, R., & Williams, N. (2010). Perceptions of agriculture teachers toward including students with disabilities. *Journal of Agricultural Education*, *51*(2), 102–114. https://doi.org/10.5032/jae.2010.02102

Harvey, M. (2001). The efficacy of vocational education for students with disabilities concerning post-school employment outcomes: A review of the literature. *Journal of Industrial Teacher Education*, *38*(3).

Harrison, J. R., Soares, D. A., & Joyce, J. (2018). Inclusion of students with emotional and behavioural disorders in general education settings: A scoping review of research in the U.S. *International Journal of Inclusive Education*, *23*(12), 1209–1231. https://doi.org/10.1080/13603116.2018.1444107

Hummel, W. G., & Hummel, B. R. (1913). *Materials and methods in high school agriculture.* MacMillan.Individuals with Disabilities Education Act, 20 U.S.C. § 1400 (2004)

Individuals With Disabilities Education Act. (2021) *Special Education Annual Reports.* https://sites.ed.gov/idea/2021-individuals-with-disabilities-education-act-annual-report-to-congress/

Johnson, L., Wilson, E., Flowers, J., & Croom, B. (2012). Perceptions of North Carolina high school agricultural educators regarding students with special needs participating in supervised agriculture experiences and F.F.A. activities. *Journal of Agricultural Education, 53*(4) 41 – 54. https://doi.org/10.5032/jae.2012.04041

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, *30*(3), 607–610. https://doi-org.spot.lib.auburn.edu/10.1177/001316447003000308

Lewis, L. J., Rayfield, J., & Moore, L. L. (2012). An assessment of students' perceptions toward factors influencing supervised agricultural experience participation. *Journal of Agricultural Education, 53*(4), 55–69. https://doi:10.5032/jae.2012.04055

Lindner, J. R., Murphy, T. H., & Briers, G. E. (2001). Handling nonresponse in social science research. *Journal of Agricultural Education*, *42*(4), 43–53. https://doi.org/10.5032/jae.2001.04043

Lindner, J. R., & Lindner, N. (2024). Interpreting Likert type, summate, unidimensional, and attitudinal scales: I neither agree nor disagree, Likert or not. *Advancements in Agricultural Development*, *5*(2), 152–163. https://doi.org/10.37433/aad.v5i2.351

McKibben, J. D., Clemons, C. A., & Nurradin, M. (2022). Hybrid vigor: A quantitative analysis of job satisfaction of United States school-based secondary agricultural education classrooms. *Journal of Agricultural Education, 63*(2), 238 – 250. https://doi.10.5032/jae.2022.02238

McKibben, J. D., Hyjeck, A., Clemons, C. A., Hancock, G., & Yopp, A. (2024). Serving to learn: increasing agriculture students' self-efficacy through service-learning. *NACTA Journal, 68*(1). https://doi.org/10.56103/nactaj.v68i1.136

Narine, L., & Harder, A. (2021). Comparing the Borich model with the ranked discrepancy model for competency assessment: A novel approach. *Advancements in Agricultural Development*, *2*(3), 96–111. https://doi.org/10.37433/aad.v2i3.169

National Center for Educational Statistics. (2024). *Students with disabilities.* https://nces.ed.gov/programs/coe/indicator/cgg/students-with-disabilities

Pense, S. L., Freeburg, B. W., & Clemons, C. A. (2015). Implementation of common core state standards: Voices, positions, and frames. *Career and Technical Education Research, 40*(3), 157 – 173. https://doi.org/10.5328/cter40.3.157

Ramage, R., Stair, K. S., Roberts, R., & Blackburn, J. J. (2022). Female agriculture teachers' lived experiences and perceived professional development needs when teaching students with special needs. *Journal of Agricultural Education, 63*(4), 105 – 118. https://doi.org/10.5032/jae.2022.04105

Ross, M. (2010). *Applied Quantitative Methods in Education*. Kendall Hunt.

Rubenstein, E. D., & Thoron, A. C. (2015). Supervised agricultural experience programs: An examination of committed teachers and student-centered programs. *Journal of Agricultural Education, 56*(4), 75 – 89. https://doi:10.5032/jae.2015.04075

Smith-Hughes National Vocational Education Act of 1917, *45 C.F.R. § 104.56* (1960).

Stair, K. S. (2009). *Identifying confidence levels and instructional strategies of high school agriculture education teachers when working with students with special needs* (Publication No. 2009. 3357838) [Doctoral dissertation, North Carolina State University]. ProQuest Dissertations and Theses Global.

Stair, K. S., & Moore, G. E. (2010). Including special needs students in ag ed. *Techniques: Connecting Education and Careers, 85*(4), 52–55.

Stimson, R. W. (1919). *Vocational agricultural education by home projects.* Macmillan.

Smith, K. L. & Rayfield, J. (2016). An early historical examination of the educational inlet of supervised agricultural experiences (SAEs) and project-based learning in agricultural education. *Journal of Agricultural Education, 57*(2), 146–160. https://doi.org/10.5032/jae.2016.02146

Talbert, B. A., Croom, B., LaRose, S. E., Vaughn, R. C., & Lee, J. S. (2022). *Foundations of Agricultural Education*. Purdue University Press.

Teixeira, K.L., & Edwards, M.C. (2020). Teaching students with special needs in school-based agricultural education: A historical inquiry. *Journal of Research in Technical Careers, 4*(1), 75-95. https://doi.org/10.9741/2578-2118.1066

Vocational Education Act of 1963: Hearings before the general subcommittee on education of the committee on education and labor, House of Representatives, 88th Cong. 1 (1963).

Wilson, L. J. (2013). *The impacts of inclusive learning on special needs students, traditional students, and faculty in the agricultural education classroom.* (Publication No. 357) [Masters theses, Southern Illinois University]. Research Papers. htttp://opensiuc.lib.siu.edu/gs_rp/357

Wilkins, T. (2018). *Determining the inclusiveness of students with disabilities in Iowa agricultural classrooms* (Publication No. 2018. 10975908) [master's theses, Iowa State University]. ProQuest Dissertations and Theses Global.

Wilkens-Brittain, T., Smalley, S. W., & Hainline, M. S. (2022). Describing the inclusiveness of students with disabilities in Iowa school-based agricultural education programs. *Journal of Agricultural Education, 63*(3), 1 – 15. https://doi.org/10.5032/jae.2022.03001